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## News Release

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# USGS Reassesses Potential World Petroleum Resources: Oil Estimates Up, Gas Down

The U.S. Geological Survey's latest assessment of undiscovered oil and gas resources of the world reports an increase in global energy resources, with a 20 percent increase in undiscovered oil and a slight decrease in undiscovered natural gas. This assessment estimates the volume of oil and gas, exclusive of the U.S., that may be added to the world's reserves in the next 30 years.

"There is still an abundance of oil and gas in the world," said Thomas Ahlbrandt, USGS World Petroleum Assessment project chief. "Since oil became a major energy source about 100 years ago, about 539 billion barrels of oil have been produced outside of the U.S. We now estimate the total amount of future technically recoverable oil, outside the U.S., to be about 2120 billion barrels."

The assessment results indicate that there is more oil and gas in the Middle East and in the offshore areas of western Africa and eastern South America than previously reported, less oil and gas in Canada and Mexico, and significantly lower volumes of natural gas in the Former Soviet Union.

With the evolution of technology and new understandings of petroleum systems, the USGS World Petroleum Assessment 2000 is the first of its kind to provide a rigorous geologic foundation for estimating undiscovered energy resources for the world. The results have important implications for energy prices, policy, security, and the global resource balance.

"These assessments provide a snapshot of current information about the location and abundance of undiscovered oil and gas resources at a point in history. Such an overview provides exploration geologists, economists and investors a general picture of where oil and gas resources are likely to be developed in the future," said Gene Whitney, USGS Energy Team Chief Scientist. The USGS periodically estimates the amount of oil and gas

remaining to be found, and since 1981, the last three of these studies has shown a slight increase in the combined volume of identified reserves and undiscovered resources.

In USGS World Petroleum Assessment 2000, the world was divided into approximately one thousand petroleum provinces, based primarily on geologic factors, and then grouped into eight regions roughly comparable to the eight economic regions defined by the U.S. State Department. Significant petroleum resources are known to exist in 406 of the 1000 geologic provinces.

Additionally, estimates of reserve growth at the world level were made for the first time. Reserve growth estimates nearly equal those of undiscovered resources. Reserve growth results from the following:

- As drilling and production within discovered fields progresses, new pools or reservoirs are found that were not previously known.
- Advances in exploration technology make it possible to identify new targets within existing fields.
- Advances in drilling technology make it possible to recover oil and gas not previously considered recoverable in the initial reserve estimates.
- Enhanced oil recovery techniques increase the recovery factor for oil and thereby increase the reserves within existing fields.

Ahlbrandt and his colleagues will discuss preliminary results of the World Petroleum Assessment with the International Energy Agency in Paris on March 21. The final report will be released at the World Petroleum Congress in Calgary in June. Supporting geological data have already been released for the Former Soviet Union; Sub-Saharan Africa and North Africa; the Arabian Peninsula; South Asia; the Asia Pacific Region; South America; and Iran.

As the nation's largest water, earth and biological science, and civilian mapping agency, the USGS works in cooperation with more than 2,000 organizations across the country to provide reliable, impartial scientific information to resource managers, planners, and other customers. This information is gathered in every state by USGS scientists to minimize the loss of life and property from natural disasters, contribute to the sound conservation and the economic and physical development of the nation's natural resources, and enhance the quality of life by monitoring water, biological, energy, and mineral resources.

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## **Results:**

**Table 1. Volumes of undiscovered world petroleum, by commodity, from this assessment (mean values, exclusive of the United States) and the previous USGS assessment**

	<b>USGS 1993 Assessment (Masters, 1994)</b>	<b>USGS 2000 Assessment (this study)</b>
Undiscovered oil	539 billion barrels	649 billion barrels
Undiscovered natural gas	915 BBOE <sup>1</sup>	778 BBOE
Undiscovered natural gas liquids	90 BBOE	207 BBOE
<b>World Total</b>	<b>1544 BBOE</b>	<b>1634 BBOE</b>

<sup>1</sup>BBOE = billion barrels of oil equivalent

**Table 2. Volumes of undiscovered oil and undiscovered natural gas by region, including percentages of world totals (mean values, exclusive of the United States).**

<b>Region</b>	<b>Undiscovered Oil (billion barrels)</b>	<b>Percent of world total</b>	<b>Undiscovered natural gas (trillion cubic feet)</b>	<b>Percent of world total</b>
<b>1:</b> Former Soviet Union	116	17.9%	1611	34.5%
<b>2:</b> Middle East and North Africa	230	35.4%	1370	29.3%
<b>3:</b> Asia-Pacific	30	4.6%	379	8.1%
<b>4:</b> Europe	22	3.4%	312	6.7%
<b>5:</b> North America*	70	10.9%	154	3.3%
<b>6:</b> Central and South America	105	16.2%	487	10.4%
<b>7:</b> Sub-Saharan Africa and Antarctica	72	11.0%	235	5.0%
<b>8:</b> South Asia	4	0.6%	120	2.6%
<b>WORLD TOTALS*</b>	<b>649</b>		<b>4669</b>	

\* Exclusive of the United States

**Table 3. Estimates of reserve growth for various petroleum commodities for the world (exclusive of the United States).**

Oil reserve growth	612 billion barrels
Natural gas reserve growth	551 BBOE (3,305 trillion cubic feet)
Natural gas liquids reserve growth	42 BBOE

# USGS World Petroleum Assessment 2000 (excluding U.S.)

